

IN THE CLAIMS

This listing of claims replaces all prior listings:

1. (Currently Amended) A micro electro-mechanical system (MEMS) resonator comprising:
a substrate ~~in which a lower electrode is formed and;~~
an electrode formed on said substrate; and
a beam formed on the substrate with said electrode therebetween.
wherein,
at least one support column is provided between said substrate and said beam.
2. (Original) A MEMS resonator according to claim 1, wherein said support column is formed at a position corresponding to a node of a desired oscillation mode of said beam.
3. (Original) A MEMS resonator according to claim 1, wherein both upper and lower ends of said support column are integrated with said substrate and said beam.
4. (Currently Amended) A MEMS resonator according to claim 1, wherein said support column is formed such that one end thereof is integrated with said substrate or said beam and the other end thereof is formed not to contact with said beam or said substrate.
5. (Currently Amended) MEMS resonator according to claim 1, wherein an input electrode for a high frequency signal and an output electrode for a high frequency signal constitute the ~~lower electrode of said substrate.~~
6. (Currently Amended) A method of manufacturing a micro electro- mechanical system (MEMS) resonator, comprising the steps of:
forming a ~~lower~~ electrode on a substrate;
forming a ~~sacrifice~~ layer on said substrate including said ~~lower~~ electrode;

selectively forming an opening that reaches said substrate at a portion of said ~~sacrifice~~ layer where a support column ~~should~~ can be formed;

forming a beam on said ~~sacrifice~~ layer; and

forming inside said opening the support column integrated with said beam and said substrate; and

removing said ~~sacrifice~~ layer.

7. (Currently Amended) A method of manufacturing a micro electro-mechanical system (MEMS) resonator, comprising the steps of:

forming ~~[[a]]~~ an ~~lower~~ electrode and a support column on a substrate;

forming a ~~sacrifice~~ layer on said substrate including said ~~lower~~ electrode and said support column;

forming an opening at a portion of said layer that reaches said electrode;

forming a beam on said ~~sacrifice~~ layer and said electrode; and

removing said ~~sacrifice~~ layer such that said beam hangs over said support column providing a space therebetween and contacts said electrode.

8. (Currently Amended) A method of manufacturing a micro electro- mechanical system (MEMS) resonator, comprising the steps of:

forming a ~~lower~~ electrode on a substrate;

forming a ~~sacrifice~~ layer on said substrate including said ~~lower~~ electrode;

selectively forming ~~[[an]]~~ a first opening having a depth not to reach said substrate at a portion of said ~~sacrifice~~ layer where a support column ~~should~~ can be formed and a second opening at another portion of said layer that reaches said electrode;

forming a beam on said ~~sacrifice~~ layer and said electrode and forming inside said opening the support column integrated with said beam; and

removing said ~~sacrifice~~ layer.

9. (Currently Amended) A communication apparatus including a filter to limit a band of a transmission signal and/or reception signal, ~~comprising as said filter: a~~ the filter that includes including a micro electro- mechanical system (MEMS) resonator having:

a substrate;

~~where a lower~~ an electrode ~~[[is]]~~ formed on said substrate; and

a beam formed on the substrate with said electrode therebetween,

in which wherein,

at least one support column is provided between said substrate and said beam.

10. (Original) A communication apparatus according to claim 9, wherein said support column in said filter is formed at a position corresponding to a node of a desired oscillation mode of said beam.

11. (Original) A communication apparatus according to claim 9, wherein both upper and lower ends of said support column in said filter are integrated with said substrate and said beam.

12. (Original) A communication apparatus according to claim 9, wherein said support column in said filter is formed such that one end thereof is integrated with said substrate or said beam and the other end thereof is formed not to contact with said beam or said substrate.

13. (Currently Amended) A communication apparatus according to claim 9, wherein an input electrode for a required first frequency signal and an output electrode for a required second frequency signal constitute ~~the lower said electrode of said substrate in said filter.~~